

line 4, change "a pattern" to --the direction and width--.

Claim 16, line 3, change "beam widths" to --width--;

line 4, change "the" (first occurrence) to --a--;

line 5, change "the" to --a--.

Claim 17, line 3, change "beam widths" to --width--;

line 4, change "the" (first occurrence) to --a--;

line 5, change "the" (both occurrences) to --a--;

line 6, change "the beam width of each beam" to --widths--.

Claim 18, line 5, change "the optimum pattern" to --optimum control--.

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~~19~~. (Amended) The adaptive antenna as claimed in Claim ¹³~~15~~,

wherein said beam pattern controlling means has:

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a pattern information storing unit for storing [the] optimum [pattern] direction and width information [of] for each of the beams corresponding to the communication amount of each of the beams; and

means for calculating an exciting weight [of which the] corresponding to a minimum difference between [a pattern] direction and width of each of the beams and [a pattern of each of the beams] the optimum direction and width information stored in said pattern information storing unit [becomes minimum].--.

Claim 20, line 4, change "pattern" to --direction and width--.

REMARKS

Favorable reconsideration of this application is respectfully requested.

Claims 1, 2, 4-12, and 14-20 are presented for examination. Claims 3 and 13 have been

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canceled without prejudice or disclaimer. Claims 1, 2, 4-12, and 14-20 have been amended to better clarify the invention without the introduction of any new matter.

In the outstanding Official Action, Claims 1-20 were rejected under 35 U.S.C. §102(e) as being anticipated by Dunbridge et al (U.S. Patent No. 5,815,116, hereinafter Dunbridge).

Before discussing the reasons why the rejection of the claims is traversed, it is believed that a brief review of the present invention would be helpful.

In the present invention, an adaptive antenna is provided which controls a direction and width of plural antenna beams based on a detected amount (e.g., the number of users) of communication.

In a second aspect of the present invention, the direction and width of the beams are controlled so that the communications amount of each of the beams is nearly matched.

In yet another aspect of the present invention, the direction and width of each beam is controlled when a detected maximum communication amount exceeds a predetermined value.

In contradistinction to the various aspects of the present invention, Dunbridge teaches that an adjustable beam and an omni-directional antenna are switched by a phased array antenna in accordance with the position of the user. The adjustable beams with each of the phased array antennas detect the direction of each of the users positioned in the periphery of the cell to track user movement. In addition, for the user positioned in close proximity to the center location of the cell, communication is performed by the omni-directional antenna.

Dunbridge also teaches that a plurality of fixed beams can be used instead of the above-described phased array antenna. In this second system, the movement of the user is tracked by selecting one of the plurality of fixed beams.

Note that detection means 70(b) of Dunbridge is a user tracking assembly used for

tracking movements of the user and not the amount of any communication, contrary to what is claimed.

The adaptive antenna of claims and 11 includes controlling a direction and a width of each of the beams on the basis of the communication amount (in other words, the number of users) of data transmitted or received with each of the beams. As noted above, Dunbridge describe that a direction of the beam is controlled to be directed to a user. However, Dunbridge does not describe or suggest control of a beam width nor does Dunbridge describe or suggest that a beam pattern is in any way controlled corresponding to the communication amount (namely, the number of users).

With respect to Claims 2 and 12, it is noted that the direction and a width of each of the beams are controlled so as to cause the communication amount (the number of users) of each the beams to be nearly matched corresponding to the communication amount (the number of users) of data transmitted or received with each of the beams. Thereby, according to the present invention, the communication amount (the number of users) of each of the beams can be uniform, and the number of terminals being capable of being accommodated per base station can be increased by allowing the communication capacity of the base station to be effectively used. On the other hand, Dunbridge merely teaches and suggests that a beam pattern is formed so as to direct one beam in the direction of a detected user. Consequently, Dunbridge cannot be said to anticipate or render obvious the subject matter of Claims 2 and 12 which provides a uniform communication amount for each of the beams.

In addition, Claims 4 and 14 provide that a direction and a width of each of the beams are controlled when the maximum communication amount (the number of users) of each of the beams exceeds a predetermined value. Thereby, useless loading does not arise. Dunbridge does

not teach or suggest such a technique.

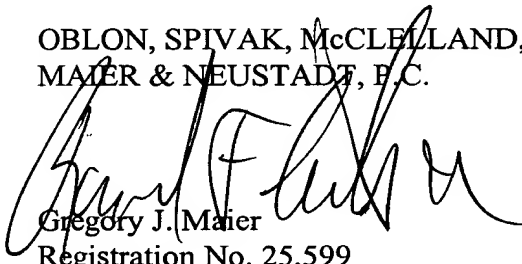
With respect to Claims 5-7 and 15-17, these claims recite specific control based on the beam pattern controlling means of respective base Claims 2 and 12. Dubridge does not meet or render the base claims obvious as noted above and does not teach or suggest the further features of these claims.

Similarly, Claims 8-10 and 18-20 all recite specific limitations as to setting an exciting weight for an antenna element in accordance with a beam pattern controlling means as set in respective base Claims 5 and 15. Dunbridge again fails to meet or render obvious the limitations of the base claims, much less the features added by these claims.

Since no further issues are believed to be outstanding, it is believed that this application is clearly in condition for formal allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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